The STD/HIV Connection: Implications for STD/HIV Prevention Providers

A Training Module for Clinicians

Developed by
The Center for Health and Behavioral Training (CHBT)

Rochester, NY

CDC STD Prevention

The STD/HIV Connection

Understanding the
Inter-relationships

Between Sexually Transmitted Diseases
and Human Immunodeficiency Virus:

Implications for HIV Prevention

CDC
STD Prevention

The STD/HIV Connection

Developed by the

- Part II. Behavioral & Social Intervention Training Centers of the National Network of STD/HIV Prevention Training Centers (PTCs)
  - New York State, Rochester Center
  - Colorado, Denver Center

Objectives

Upon completion of this content the learner will be able to:

1. Describe the three main areas of inter-relationships between STDs and HIV
2. List the determinants of infectivity for individuals and how they are altered in the presence of an STD
3. Explain how the presence of an STD increases both susceptibility to and communicability of HIV
4. Recognize how clinical providers should use this new information to change STD and HIV prevention practice with clients

STD/HIV Inter-Relationships:

- Behavioral – both sexually transmitted
- Epidemiological – populations with high rates of STDs show disproportionally high rates of sexually transmitted HIV
- Immunological – STDs cause mucosal immunity changes which facilitate HIV acquisition and transmission

The STD/HIV Connection

- What factors determine whether an STD or HIV will be transmitted through a sexual exposure?

- How does the presence of an STD affect those factors for both HIV-positive and HIV-negative persons?

Topics

- Infectivity
- STD/HIV inter-relationships
- Implications for clinical providers

Infectivity

Infectivity

- The probability of transmission (STD or HIV) from an infected person to an uninfected person after an exposure depends on 3 main factors …

Determinants of Infectivity

- Viral (organism) dose (V)
- Blood/mucous membrane exposure (E)
- Host factors/resistance (R)

Infectivity =

$$\frac{\text{Viral Dose} \times \text{Exposure}}{\text{Resistance}}$$

Infectivity

VIRAL DOSE - How much HIV organism?

Body Fluids	HIV Clinical Stage
Semen	Acute, primary
Cervical/vaginal fluids	Asymptomatic carrier
Blood/menses	Symptomatic
Breast milk	

Infectivity

EXPOSURE - Contact with organism

- Number of contacts/ partners
- Chance that partner is infected
- Type of exposure/duration of contact

Infectivity

EXPOSURE - Contact with organism

- Risk behavior plus prevalence of organism = risk
- Varies geographically and between social networks

Infectivity

RESISTANCE - Immune Responses to Organism

- Systemic (humoral)
- Mucosal (cellular)
- Genetic

STD/HIV Inter-Relationships

Presence of an STD

- STD causes infection and desquamation of squamous or columnar cells producing an inflammatory response
- Results in increased number of HIV target cells on mucous membrane surfaces and a portal of entry for HIV

For Persons Who Are HIV (-)

Having an STD:

- Increases recruitment of target cells on mucous membrane surfaces
- Significantly increases HIV susceptibility

For Persons Who Are HIV (-)

- Having an STD:

Viral Dose x Exposure

Resistance ↓

For Persons Who Are HIV (+)

Having an STD:

- Increases recruitment of target cells already infected with HIV
- Increases HIV viral shedding from mucous membranes
- Increases HIV communicability

Influence of Treatment and Cure of Gonorrhea on Urethral HIV DNA Detection

- No gonorrhea 6/35 (17%)
- Gonorrhea (before Rx) 21/48 (44%)

P=0.02

- Gonorrhea (after Rx) 10/48 (21%)

Source: Moss GB, Overbaugh J, Welch M, et al. (1995).

For Persons Who Are HIV (+)

- Having an STD:

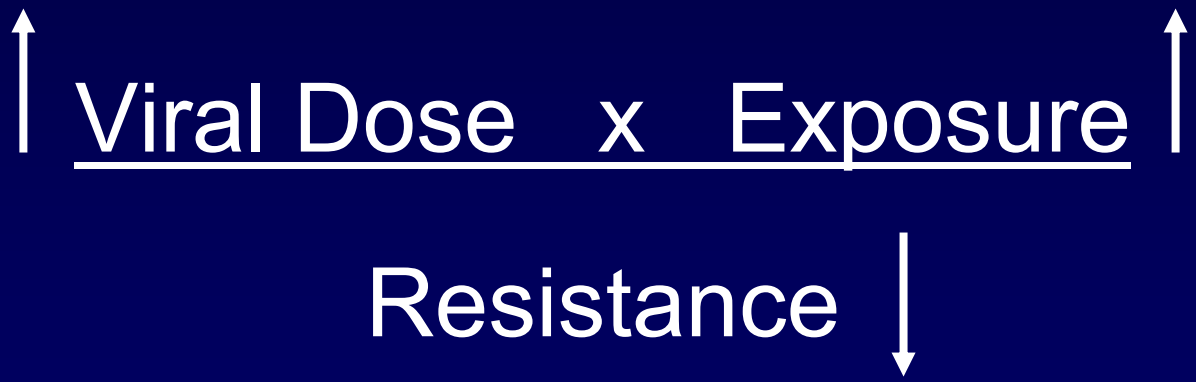
$$\uparrow \frac{\textbf{Viral Dose} \times \text{Exposure}}{\text{Resistance}}$$

STD/HIV Inter-Relationships

- STDs increase susceptibility to HIV
- STDs increase communicability of HIV

Can use “double-edge sword” analogy with patients

In Communities with Disproportionately High Rates of STDs and HIV



Implications for Clinical Providers

Changing Clinical Presentation of STDs:

- Majority of patients with STDs
  - ***HAVE NO SYMPTOMS!***
- History of symptoms less relevant – routine screening recommended

Role of STD/HIV Health Care Providers:

- STD routine screening for patients ages 15-35
- HIV counseling and testing for all patients with an STD
- STD routine screening for patients with HIV/AIDS
- Screen and treat asymptomatic patients for STDs to prevent HIV transmission
- Screen and treat asymptomatic HIV/AIDS patients for STDs to prevent HIV transmission

STD/HIV Inter-Relationships

- Screening and treatment of STDs is an important HIV prevention intervention

(IOM Report)

- Need to expand services delivery models to community and criminal justice settings